

Introduction

In my experiment, I tested if the amount of sugar will affect the amount of tooth decay. I tested this idea by measuring how much weight 6 different eggshells lost over a period of 31 days after being in 6 different liquids. In this experiment, my independent variable is the type of liquid. My dependent variable is the amount of weight that each egg loses. My control variables are the amount of liquid, the size of the cup, the time period, the environment, the type of egg, and the weight of the egg.

Background Information

Eggshells are similar to teeth. They both have a protective outer layer of tissue and they are made up of calcium. For teeth, this protective layer is called enamel. When sugar is left on your teeth, the bacteria in the sugar eat away at your enamel. This leaves your teeth more vulnerable. The sugar creates holes in your teeth, which is called a cavity. I am using eggshells instead of teeth because it is harder to get teeth.

Hypothesis

If I put 6 eggs in 6 different liquids, the egg that is in the cranberry juice will lose the most weight by the end of my experiment because cranberry juice has the most sugar. My hypothesis is that more sugar equals more decay, and cranberry juice has 24.8 grams of sugar in 6 oz, which is more than the other liquids have in 6 oz.

Materials

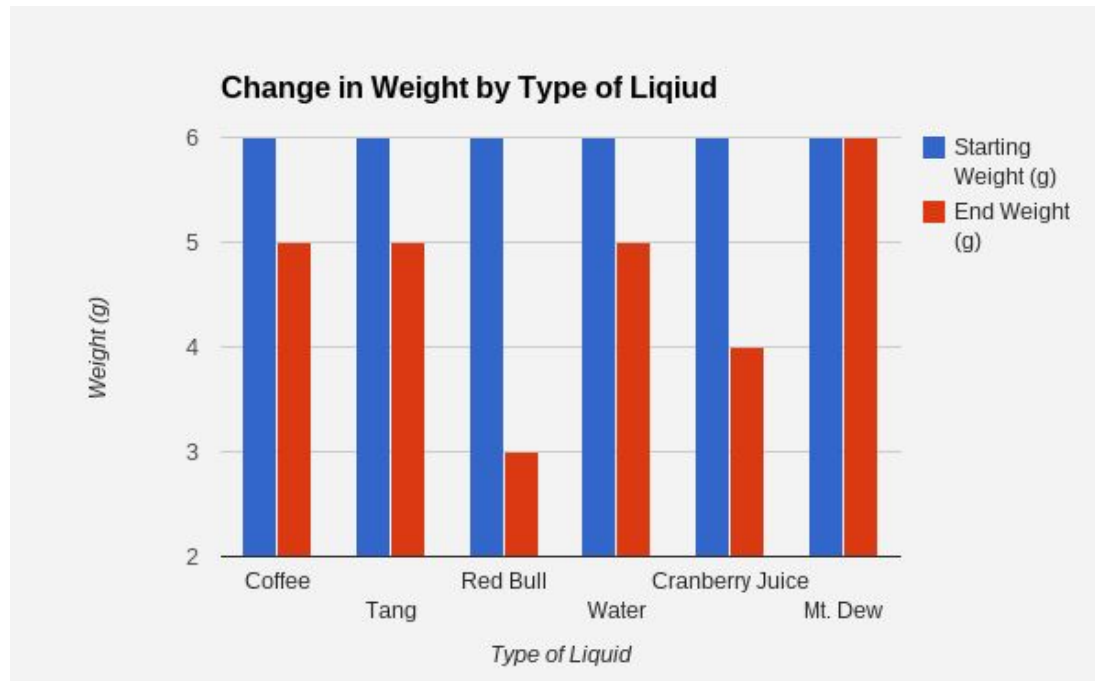
- 6 white eggs
- 6 cups (all same size)
- A scale
- A bowl
- A sharp needle
- Tang
- Coffee
- Mt. Dew
- Red Bull
- Water
- Cranberry juice
- Camera/iphone
- Labels/ sticky notes
- Pen
- Measuring cup
- Plastic knife

- Rubber gloves
- Duct tape

Procedure

1. Wash a white egg carefully with warm, soapy water.
2. Poke a hole in both ends of the egg with a sharp needle.
3. Hold the egg over a bowl and blow into one hole. The bowl will catch the yolk.
4. After blowing everything into the bowl, rinse the egg off with water. Let the egg dry and repeat steps 1-3 until you have 6 eggs blown.
5. Rip off six pieces of duct tape and write the name of one liquid on each of them. Tape them one per cup.
6. Weigh one egg. Write the weight of the egg on a sticky note. Put the sticky note underneath a cup, with the egg on top of the sticky note. Repeat until you have done that to all the eggs.
7. Take your measuring cup and measure 6 oz of the first liquid.
8. Pour the 6 oz into one cup. Write the name of the liquid you poured on the sticky note below the cup.
9. Repeat with the different liquids until all cups are full.
10. Place one egg in each cup.
11. Take a picture of each liquid.
12. Set all the cups in the same environment, in a closet on a shelf. Take a picture of each individual egg/liquid every 5-8 days.
13. After 31 days, take the eggs out of the liquid using rubber gloves. Wait 3 days for the eggs to dry.
14. After 3 days, wearing rubber gloves, carefully scrape off anything that isn't the eggshell using a plastic knife. DO NOT SCRAPE OFF THE EGGSHELL!
15. Take pictures of each egg.
16. Weigh each egg one at a time. (Use gloves!) Record their weight on the sticky note that is below them. Repeat until all the eggs are weighed.
17. Subtract the end weight from the starting weight for each egg, to give you total weight lost.
18. The egg with largest weight lost has decayed the most.

Data



This bar graph shows the starting (blue bar) and the end weight (red bar) for all 6 eggs. To understand which egg saw the most weight loss, you can see the biggest difference in the Red Bull, where the starting weight 6 grams and the end weight was 3 grams. In contrast to this, Mt. Dew saw no weight loss. The starting and end weight was 6 grams. The table below shows the weight loss.

Type of Liquid	Weight Loss (g)
Coffee	1
Tang	1
Red Bull	3
Water	1
Cranberry Juice	2
Mt. Dew	0

Conclusion

In this experiment, I tested if the amount of sugar in a liquid would increase or decrease the amount of tooth decay. Because of this, I thought that cranberry juice would cause the most decay on the whole eggshell because it had the most amount of sugar. After 31 days, Red Bull

had the most weight lost. My hypothesis was incorrect. I think that there may be another factor in the liquids that I didn't think of before- the types of sugar, and the amount of caffeine. If I did this experiment again, I would use a use a more precise scale and try to submerge the eggs, because in this experiment they were only halfway submerged.

Works Cited

Cavity buster. (2006, February). *SuperScience*, 17(5), 3.

Tooth decay. (2007). In *World of Health*. Gale.

"Preventing Tooth Decay." *WebMD*. WebMD LLC, 2015. Web.
<<http://www.webmd.com/oral-health/guide/tooth-decay-prevention>>.